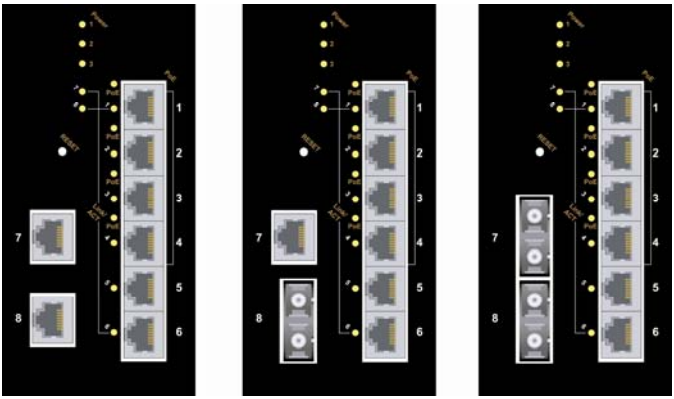
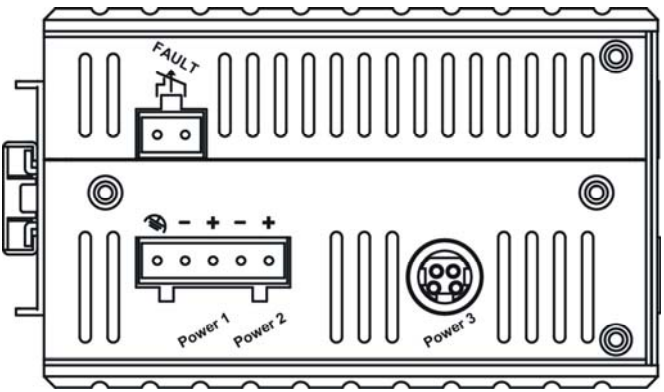
Quick Start Guide

This quick start guide describes how to install and use the Hardened Web-Smart PoE (Power over Ethernet) Ethernet Switch. This is the switch of choice for harsh environments constrained by space.

Physical Description

The Port Status LEDs and Power Inputs





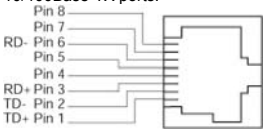
LED	State	Indication
Link/ACT	Steady	A valid network connection established.
	Flashing	Transmitting or receiving data. ACT stands for ACTIVITY.
PoE	Steady	Power Device (PD) is connected.
	Off	Power Device (PD) is disconnected.

Power Input Assignment			
Power3		48VDC	DC Jack
Power2	+	48VDC	Terminal Block
	–	Power Ground	
Power1	+	48VDC	
	–	Power Ground	
⏚		Earth Ground	
Relay Output Rating			0.1A @ 24VDC
Relay Alarm Assignment			
FAULT	*Warning signal disable for following: The relay contact closes if Power1 and Power2 are both failed but Power3 on. The relay contact closes if Power3 is failed but Power1 and Power2 are both on.		

DC Terminal Block Power Inputs: There are two pairs of power inputs can be used to power up this switch. Redundant power supplies function is supported.

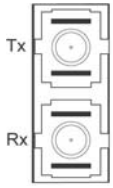
The 10/100Base-TX and 100Base-FX Connectors

The 10/100Base-TX Connections
The following lists the pinouts of 10/100Base-TX ports.

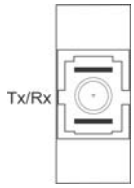


Pin	Regular Ports	Uplink port
1	Output Transmit Data +	Input Receive Data +
2	Output Transmit Data -	Input Receive Data -
3	Input Receive Data +	Output Transmit Data +
4	NC	NC
5	NC	NC
6	Input Receive Data -	Output Transmit Data -
7	NC	NC
8	NC	NC

The 100Base-FX Connections
The fiber port pinouts
The Tx (transmit) port of device I is connected to the Rx (receive) port of device II, and the Rx (receive) port of device I to the Tx (transmit) port of device II.



The WDM 100Base-FX Connections
The fiber port pinouts
Only one single-mode optical fiber is required to transmit and receive data.



Functional Description

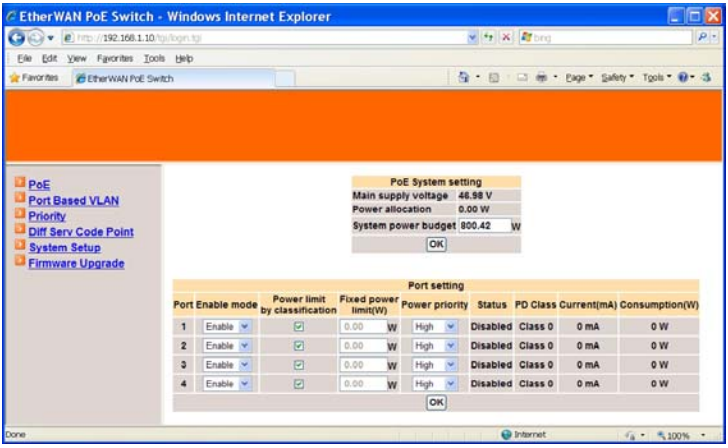
- Meets NEMA TS1/TS2 Environmental requirements such as temperature, shock, and vibration for traffic control equipment.
- Meets EN61000-6-2 & EN61000-6-3 EMC Generic Standard Immunity for industrial environment.
- Manageable via Web browser interface.
- Supports IEEE802.3af Power over Ethernet (PoE) Power Sourcing Equipment (PSE).
- Supports IEEE802.3/802.3u/802.3x. Auto-negotiation: 10/100Mbps-full/half-duplex; Auto MDI/MDIX.
- 100Base-FX: Multi mode SC or ST type; Single mode SC or ST type; WDM Single mode SC type.
- Supports 1024 MAC addresses. Provides 1M bits memory buffer.
- Store-and-forward mechanism.
- Full wire-speed forwarding rate.
- Alarms for power and port link failure by relay output.
- Power Supply: Redundant 48VDC Terminal Block power inputs and 48VDC DC JACK with 100-240VAC external power supply.
- Operating voltage and Max. current consumption: 1.5A @ 48VDC. Power consumption: 72W Max.

- -40℃ to 75℃ (-40℉ to 167℉) operating temperature range. Tested for functional operation @ -40℃ to 85℃ (-40℉ to 185℉). Web-Smart function operating temperature @ -20℃ to 85℃ (-4℉ to 185℉).
- Supports DIN-Rail, Panel, or Rack Mounting installation.

Web Configuration

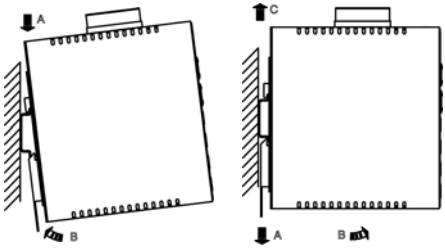
- Login the switch:
  Specify the default IP address (192.168.1.10) of the switch in the web browser. A login window will be shown as below:

- Enter the factory default user name: admin.
  Enter the factory default password (no password).
  Then click on the “OK” button to log on to the switch.


EtherWAN PoE Switch - Windows Internet Explorer
PoE
Port Based VLAN
Priority
Diff Serv Code Point
System Setup
Firmware Upgrade
PoE System setting
Main supply voltage 46.98 V
Power allocation 0.00 W
System power budget 800.42 W
OK
Port setting
Port Enable mode Power limit by classification Fixed power limit(W) Power priority Status PD Class Current(mA) Consumption(W)
1 Enable 0.00 W High Disabled Class 0 0 mA 0 W
2 Enable 0.00 W High Disabled Class 0 0 mA 0 W
3 Enable 0.00 W High Disabled Class 0 0 mA 0 W
4 Enable 0.00 W High Disabled Class 0 0 mA 0 W
OK

Assembly, Startup, and Dismantling

- Assembly: Place the switch on the DIN rail from above using the slot. Push the front of the switch toward the mounting surface until it audibly snaps into place.
- Startup: Connect the supply voltage to start up the switch via the terminal block (or DC JACK).
- Dismantling: Pull out the lower edge and then remove the switch from the DIN rail.



Preface

This manual describes how to install and use the Hardened Web-Smart PoE Ethernet Switch. This switch introduced here is designed to deliver full scalability with web-based management functions. Capable of operating at temperature extremes of -40°C to +75°C, this is the switch of choice for harsh environments constrained by space.

Port 1 to port 4 on this switch supports IEEE802.3af Power over Ethernet (PoE) Power Sourcing Equipment (PSE) and can detect an IEEE802.3af compliant Powered Device (PD). Using external 48VDC power inputs through Terminal Block or Power Jack, data and power can be transmitted to a Powered Device (PD) over the same twisted-pair Ethernet cable through port 1 to port 4 on the switch.

To get the most out of this manual, you should have an understanding of Ethernet networking concepts.

In this manual, you will find:

Features on the Hardened Web-Smart PoE Ethernet Switch

- Illustrative LED functions
- Installation instructions
- Management Configuration
- Specifications

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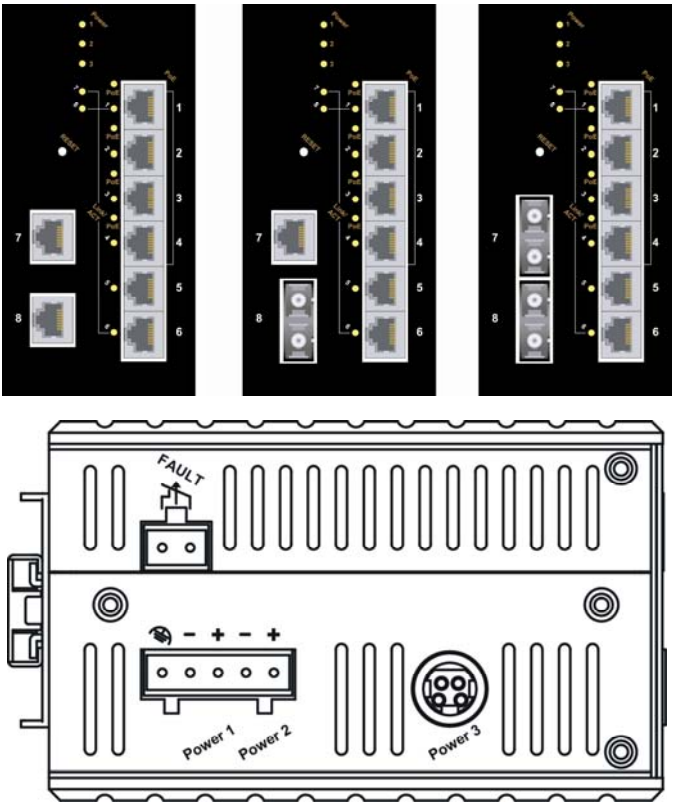
Product Overview

Hardened Web-Smart PoE Ethernet Switch



Front and Top View

Package Contents

When you unpack the product package, you shall find the items listed below. Please inspect the contents, and report any apparent damage or missing items immediately to your authorized reseller.

- The Hardened Web-Smart PoE Ethernet Switch
- User's Manual

Product Highlights

Basic Features

- Complies with NEMA TS1/TS2 Environmental requirements such as temperature, shock, and vibration for traffic control equipment.
- Complies with EN61000-6-2 & EN61000-6-3 EMC Generic standard immunity for Industrial environment.
- Manageable via Web browser interface.
- Supports IEEE802.3af Power over Ethernet (PoE) Power Sourcing Equipment (PSE).
- Supports IEEE802.3/802.3u/802.3x. Auto-negotiation: 10/100Mbps-full/half-duplex; Auto MDI/MDIX.
- 100Base-FX: Multi mode SC or ST type; Single mode SC or ST type; WDM Single mode SC type.
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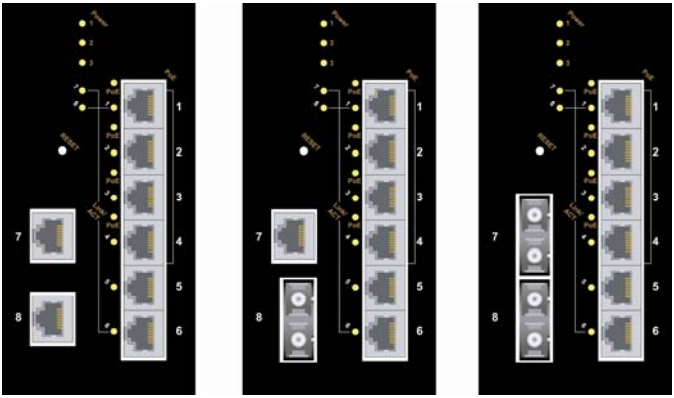
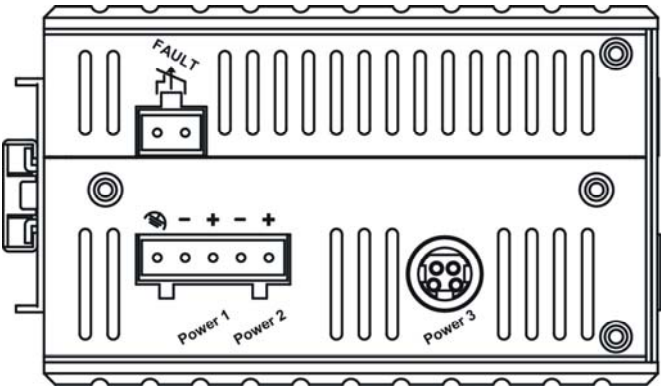
- -40℃ to 75℃ (-40℉ to 167℉) operating temperature range. Tested for functional operation @ -40℃ to 85℃ (-40℉ to 185℉). Web-Smart function operating temperature @ -20℃ to 85℃ (-4℉ to 185℉).
- Reset button on front panel.
- Front panel port status LEDs.
- Hardened aluminum case.
- Supports DIN-Rail, Panel, or Rack Mounting installation.

Front Panel Display





- Power (Power1, Power2, Power3)

This LED comes on when the switch is properly connected to power and turned on.

- . Port Status LEDs

The LEDs are located on the front panel, displaying status for each respective port. Please refer to the following table for more details.

LED	State	Indication
Link/ACT	Steady	A valid network connection established.
	Flashing	Transmitting or receiving data. ACT stands for ACTIVITY.
PoE	Steady	Power Device (PD) is connected.
	Off	Power Device (PD) is disconnected.

Physical Ports

The Hardened Web-Smart PoE Ethernet Switch provides:

CONNECTIVITY

- RJ-45 connectors on TX ports
- ST or SC connector on 100Base-FX fiber port

MODE SELECTION

- 10Base-T full-duplex mode
- 10Base-T half-duplex mode
- 100Base-TX full-duplex mode
- 100Base-TX half-duplex mode
- 100Base-FX full-duplex mode
- Auto-negotiating mode

Switch Management

Web-based browser interface

The switch also boasts a point-and-click browser-based interface that lets user access full switch configuration and functionality from a Netscape or Internet Explorer browser.

Installation

This chapter gives step-by-step instructions about how to install the switch:

Selecting a Site for the Switch

As with any electric device, you should place the switch where it will not be subjected to extreme temperatures, humidity, or electromagnetic interference. Specifically, the site you select should meet the following requirements:

-The ambient temperature should be between -40°C to 75℃ (-40℉ to 167℉).

-The relative humidity should be less than 95 percent, non-condensing.

-Surrounding electrical devices should not exceed the electromagnetic field (RFC) standards.

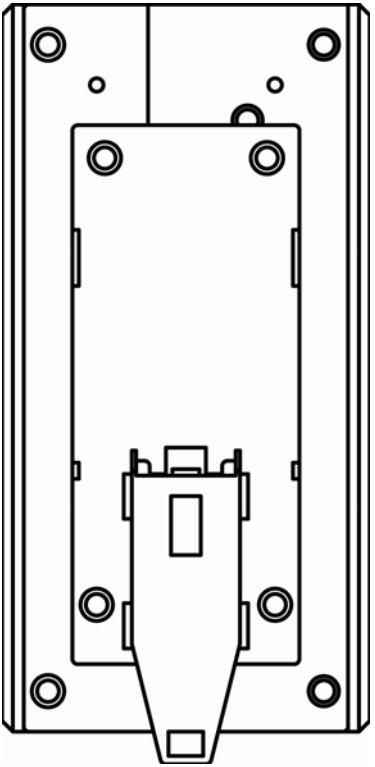
-Make sure that the switch receives adequate ventilation. Do not block the ventilation holes on each side of the switch.

DIN Rail Mounting

Fix the DIN rail attachment plate to the back panel of the switch.

Installation: Place the switch on the DIN rail from above using the slot. Push the front of the switch toward the mounting surface until it audibly snaps into place.

Removal: Pull out the lower edge and then remove the switch from the DIN rail.



Connecting to Power

Redundant DC Terminal Block Power Inputs or 48VDC DC Jack:

Redundant DC Terminal Block Power Inputs

There are two pairs of power inputs for use with redundant power sources. You only need to have one power input connected to run the switch.

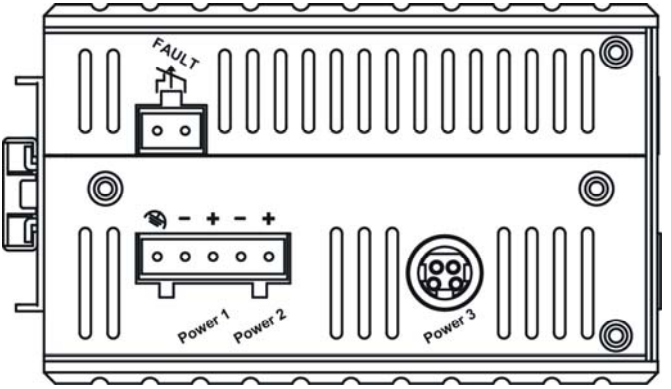
Step 1: Connect the DC power cord to the plug-able terminal block on the switch, and then plug it into a standard DC outlet.

Step 2: Disconnect the power cord if you want to shut down the switch.

48VDC DC Jack

Step 1: Connect the supplied AC to DC power adapter to the receptacle on the topside of the switch.

Step 2: Connect the power cord to the AC to DC power adapter and attach the plug into a standard AC outlet with the appropriate AC voltage.



Top View

Alarms for Power and Port Link Failure

Step 1: There are two pins on the terminal block used for power failure detection. It provides the normally closed output when the power source is active. Use this as a dry contact application to send a signal for power failure detection.

<table>
<tr><td colspan="4">Power Input Assignment</td></tr>
<tr><td colspan="2">Power3</td><td>48VDC</td><td>DC Jack</td></tr>
<tr><td rowspan="2">Power2</td><td>+</td><td>48VDC</td><td rowspan="4">Terminal Block</td></tr>
<tr><td>–</td><td>Power Ground</td></tr>
<tr><td rowspan="2">Power1</td><td>+</td><td>48VDC</td></tr>
<tr><td>–</td><td>Power Ground</td></tr>
<tr><td colspan="2"> </td><td>Earth Ground</td></tr>
<tr><td colspan="3">Relay Output Rating</td><td>0.1A @ 24VDC</td></tr>
<tr><td colspan="4">Relay Alarm Assignment</td></tr>
<tr><td>
FAULT</td><td colspan="3">*Warning signal disable for following:
The relay contact closes if Power1 and Power2 are both failed but Power3 on.
The relay contact closes if Power3 is failed but Power1 and Power2 are both on.</td></tr>
</table>

Special note:
The relay output is normal open position when there is no power to the switch. Please do not connect any power source to this terminal to prevent shorting your power supply.

Connecting to Your Network

Cable Type & Length

It is necessary to follow the cable specifications below when connecting the switch to your network. Use appropriate cables that meet your speed and cabling requirements.

Cable Specifications

Speed	Connector	Port Speed Half/Full Duplex	Cable	Max. Distance
10Base-T	RJ-45	10/20 Mbps	2-pair UTP/STP Cat. 3, 4, 5	100 m
100Base-TX	RJ-45	100/200 Mbps	2-pair UTP/STP Cat. 5	100 m
100Base-FX	ST, SC	100/200 Mbps	MMF (50 or 62.5μm)	2 km
100Base-FX	ST, SC	100/200 Mbps	SMF (9 or 10μm)	20, 40, or 75 km

Cabling

Step 1: First, ensure the power of the switch and end devices are turned off.

<Note> Always ensure that the power is off before any installation.

Step 2: Prepare cable with corresponding connectors for each type of port in use.

Step 3: Consult Cable Specifications Table on previous page for cabling requirements based on connectors and speed.

Step 4: Connect one end of the cable to the switch and the other end to a desired device.

Step 5: Once the connections between two end devices are made successfully, turn on the power and the switch is operational.

Switch Management

This chapter explains the methods that you can use to configure management access to the switch. It describes the types of management applications and the communication and management protocols that deliver data between your management device (workstation or personal computer) and the system. It also contains information about port connection options.

This chapter covers the following topics:

- Management Access Overview
- Key Concepts
- Key Guidelines for Implementation
- Web Management Access
- Standards, Protocols, and Related Reading

Management Access Overview

The switch gives you the flexibility to access and manage the switch using any or all of the following methods.

The web browser interface support is embedded in the switch software and is available for immediate use.

Web Management

The switch provides a browser interface that lets you configure and manage the switch remotely.

After you set up your IP address for the switch, you can access the switch's web interface applications directly in your web browser by entering the IP address of the switch. You can then use your web browser to list and manage switch configuration parameters from one central location, just as if you were directly connected to the switch's console port.

Web-Based Browser Management

The switch provides a web-based browser interface for configuring and managing the switch. This interface allows you to access the switch using a preferred web browser.

This chapter describes how to configure the switch using its web-based browser interface.

Logging on to the switch

SWITCH IP ADDRESS
In your web browser, specify the IP address of the switch. Default IP address is 192.168.1.10.

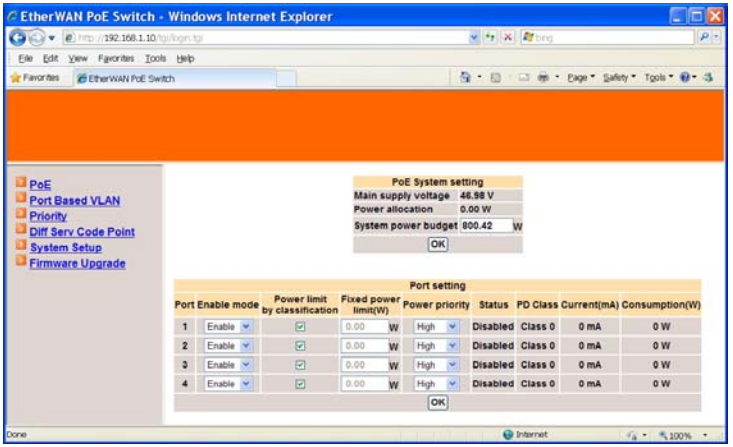
USER NAME
Enter the factory default user name: admin.

PASSWORD
Enter the factory default password (no password).
Or enter a user-defined password if you followed the instructions later and changed the factory default password.

Then click on the “OK” button to log on to the switch.

Understanding the Browser Interface

The web browser interface provides groups of point-and-click buttons at the left field of the screen for configuring and managing the switch.


EtherWAN PoE Switch - Windows Internet Explorer
PoE
Port Based VLAN
Priority
Diff Serv Code Point
System Setup
Firmware Upgrade
PoE System setting
Main supply voltage 46.98 V
Power allocation 0.00 W
System power budget 800.42 W
OK
Port setting
Port Enable mode Power limit by classification Fixed power limit(W) Power priority Status PD Class Current(mA) Consumption(W)
1 Enable 0.00 W High Disabled Class 0 0 mA 0 W
2 Enable 0.00 W High Disabled Class 0 0 mA 0 W
3 Enable 0.00 W High Disabled Class 0 0 mA 0 W
4 Enable 0.00 W High Disabled Class 0 0 mA 0 W
OK

PoE

Port Based VLAN

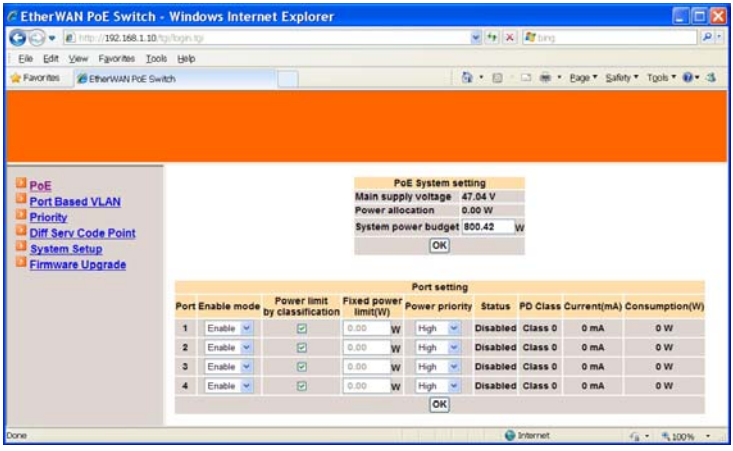
Priority

Diff Serv Code Point
Bit 0 ~ 31, Bit 32 ~ 63

System Setup

Firmware Upgrade

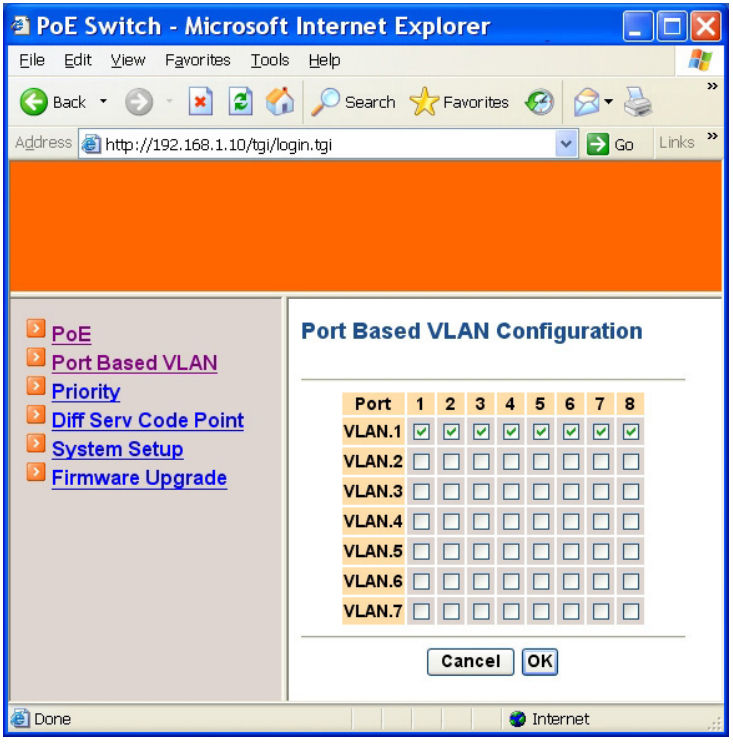
PoE


EtherWAN PoE Switch - Windows Internet Explorer
PoE
Port Based VLAN
Priority
Diff Serv Code Point
System Setup
Firmware Upgrade
PoE System setting
Main supply voltage 47.04 V
Power allocation 0.00 W
System power budget 800.42 W
OK
Port setting
Port Enable mode Power limit by classification Fixed power limit(W) Power priority Status PD Class Current(mA) Consumption(W)
1 Enable 0.00 W High Disabled Class 0 0 mA 0 W
2 Enable 0.00 W High Disabled Class 0 0 mA 0 W
3 Enable 0.00 W High Disabled Class 0 0 mA 0 W
4 Enable 0.00 W High Disabled Class 0 0 mA 0 W
OK

PoE

1. System power budget: Click in “System power budget” text box and type a new system power budget.
2. OK: Click “OK” button to update your settings.
3. Enable mode: Click “Enable mode” drop-down menu to choose “Enable” or “Disable” from the “Enable mode” drop-down list to enable or disable Port 1 ~ Port 4 to discover Powered Device (PD) connected to Port 1 ~ Port 4 of the Switch.
4. Power limit by classification: Check or uncheck “Power limit by classification” to enable or disable Port 1 ~ Port 4 to provide power to PD according to classification of maximum power range used by PD.
5. Fixed power limit(W): First uncheck “Power limit by classification” to disable Port 1 ~ Port 4 to provide power to PD according to classification of maximum power range used by PD. Then click in “Fixed power limit(W)” text box and type a new fixed power limit for Port 1 ~ Port 4 to provide power to PD.
6. Power priority: Click “Power priority” drop-down menu to choose “Low”, “Middle”, or “High” from the “Power priority” drop-down list to determine power priority of Port 1 ~ Port 4.
7. OK: Click “OK” button to update your settings.

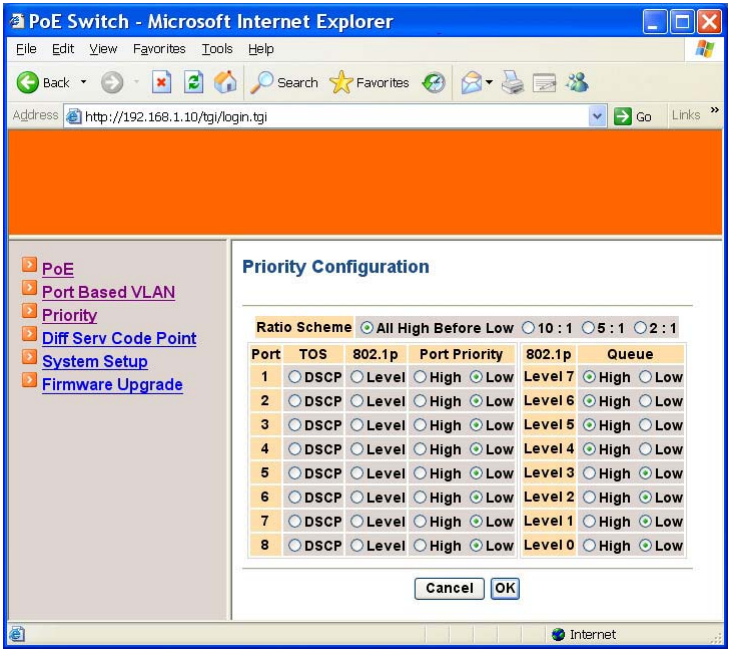
Port Based VLAN



Port Based VLAN

1. VLAN.1 ~ VLAN.7: Click and choose Port 1 ~ Port 8 to be added into VLAN.1 ~ VLAN.7.
2. Cancel: Click “Cancel” button to cancel your settings.
3. OK: Click “OK” button to update your settings.

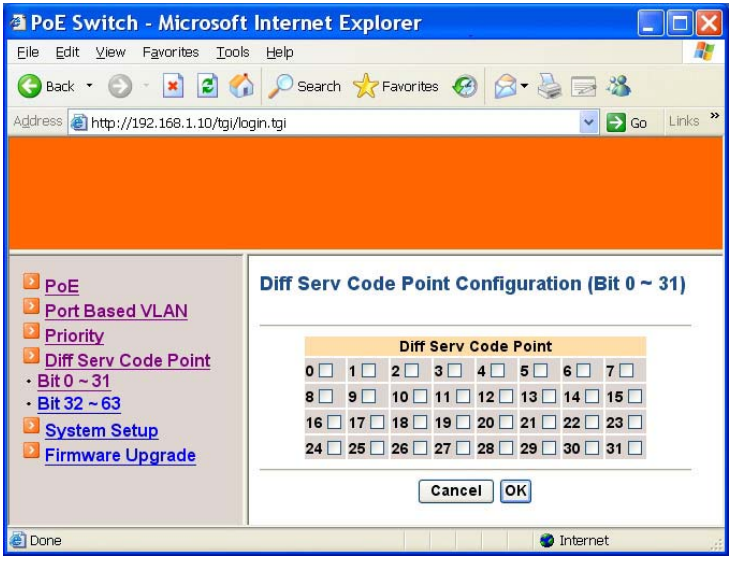
Priority


PoE Switch - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address http://192.168.1.10/tgi/login.tgi
Go Links
PoE
Port Based VLAN
Priority
Diff Serv Code Point
System Setup
Firmware Upgrade
Priority Configuration
Ratio Scheme All High Before Low 10 : 1 5 : 1 2 : 1
Port TOS 802.1p Port Priority 802.1p Queue
1 DSCP Level High Low Level 7 High Low
2 DSCP Level High Low Level 6 High Low
3 DSCP Level High Low Level 5 High Low
4 DSCP Level High Low Level 4 High Low
5 DSCP Level High Low Level 3 High Low
6 DSCP Level High Low Level 2 High Low
7 DSCP Level High Low Level 1 High Low
8 DSCP Level High Low Level 0 High Low
Cancel OK
Internet

Priority

1. Ratio Scheme: Click and choose “All High Before Low”, “10:1”, “5:1”, or “2:1” ratio scheme.
2. Port 1 ~ Port 8: Click and choose “TOS”, “802.1p”, or “Port Priority” (“High” or “Low”) for Port 1 ~ Port 8.
3. 802.1p Level 7 ~ Level 0: Click and set “High” or “Low” priority to queue of 802.1p Level 7 ~ Level 0.
4. Cancel: Click “Cancel” button to cancel your settings.
5. OK: Click “OK” button to update your settings.

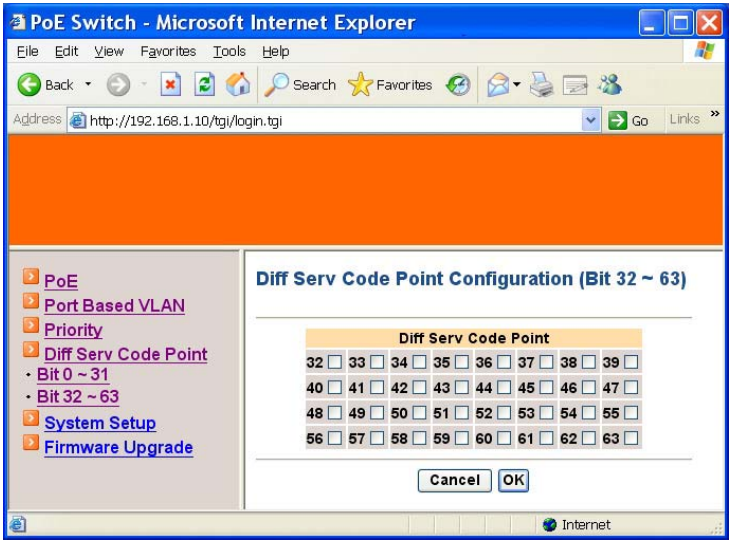
Diff Serv Code Point



Diff Serv Code Point

Bit 0 ~ 31:

1. Diff Serv Code Point: Check and set Bit 0 ~ 31 of Diff Serv Code Point to high priority.
2. Cancel: Click “Cancel” button to cancel your settings.
3. OK: Click “OK” button to update your settings.


PoE Switch - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address http://192.168.1.10/tgi/login.tgi
Go Links
PoE
Port Based VLAN
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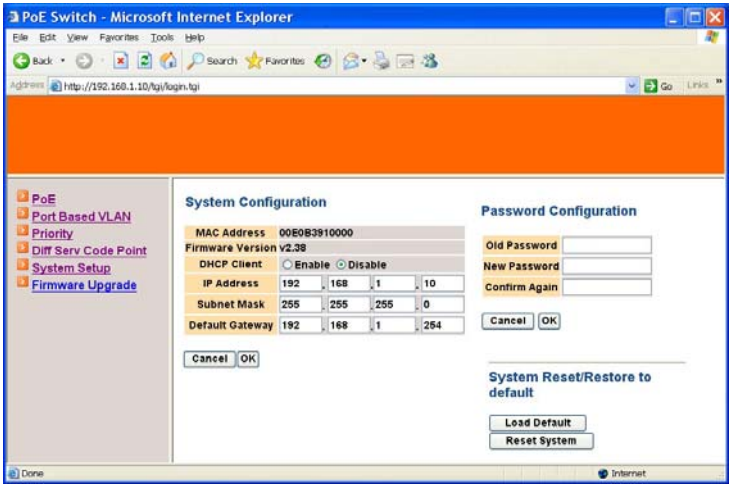
Bit 32 ~ 63
System Setup
Firmware Upgrade
Diff Serv Code Point Configuration (Bit 32 ~ 63)
Diff Serv Code Point
32 33 34 35 36 37 38 39
40 41 42 43 44 45 46 47
48 49 50 51 52 53 54 55
56 57 58 59 60 61 62 63
Cancel
OK
Internet

Bit 32 ~ 63:

1. Diff Serv Code Point: Check and set Bit 32 ~ 63 of Diff Serv Code Point to high priority.
2. Cancel: Click “Cancel” button to cancel your settings.
3. OK: Click “OK” button to update your settings.

System Setup



System Setup

System Configuration:

1. DHCP Client: Click and choose “Enable” or “Disable” to enable or disable the Switch as DHCP client to be automatically supplied an IP address, gateway address, and subnet mask from DHCP server.
2. IP Address: Click in “IP Address” text box and type a new address to change the IP Address.
3. Subnet Mask: Click in “Subnet Mask” text box and type a new address to change the Subnet Mask.
4. Default Gateway: Click in “Default Gateway” text box and type a new address to change the Default Gateway.
5. Cancel: Click “Cancel” button to cancel your settings.
6. OK: Click “OK” button to update your settings.

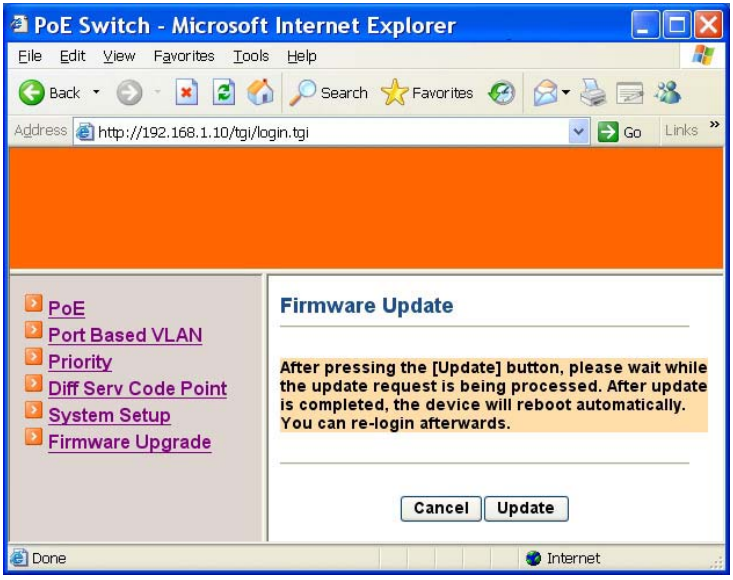
Password Configuration:

1. Old Password: Click in “Old Password” text box and type in the old password.
2. New Password: Click in “New Password” text box and type in a new password.
3. Confirm Again: Click in “Confirm Again” text box. Type the same password in “New Password” text box again to verify it.
4. Cancel: Click “Cancel” button to cancel your settings.
5. OK: Click “OK” button to update your settings.

System Reset/Restore to default:

1. Load Default: Click “Load Default” button to restore the default settings of the Switch.
2. Reset System: Click “Reset System” button to restart the Switch.

Firmware Upgrade



Firmware Update

1. Cancel: Click “Cancel” button to cancel firmware update request.
2. Update: Click “Update” button and wait for firmware update request being processed.

Specifications

Applicable Standards	IEEE802.3 10Base-T IEEE802.3u 100Base-TX/FX
Switching Method	Store-and-Forward
Forwarding Rate 10Base-T 100Base-TX/FX	 10 / 20Mbps half / full-duplex 100 / 200Mbps half / full-duplex
Performance	14,880pps for 10Mbps 148,810pps for 100Mbps
Cable 10Base-T 100Base-TX 100Base-FX:	 4-pair UTP/STP Cat. 3, 4, 5 Up to 100m (328ft) 4-pair UTP/STP Cat. 5 Up to 100m (328ft) MMF (50 or 62.5μm), SMF (9 or 10μm)
LED Indicators	Per unit – Power status (Power1, Power2, Power3) Per port – PoE: PoE, Link/ACT 10/100TX, 100FX: Link/ACT
Dimensions	68mm (W) x 110mm (D) x 135mm (H) (2.68" (W) x 4.33" (D) x 5.31" (H))
Net Weight	1Kg (2.2lbs.)
Power Input	Terminal Block: 48VDC DC Jack: 48VDC, External AC/DC required
Operating Voltage & Max. Current Consumption	1.5A @ 48VDC
Power Consumption	72W Max.
Operating Temperature	-40°C to 75℃ (-40℉ to 167℉) Tested for functional operation @ -40℃ to 85℃ (-40℉ to 185℉) Web-Smart function operating temperature @ -20℃ to 85℃ (-4℉ to 185℉)
Storage Temperature	-40°C to 85℃ (-40℉ to 185℉)
Humidity	5%-95% non-condensing
Safety	UL508, EN60950-1, IEC60950-1
EMI	FCC Part 15, Class A EN61000-6-3: EN55022, EN61000-3-2, EN61000-3-3
EMS	EN61000-6-2: EN61000-4-2 (ESD Standard) EN61000-4-3 (Radiated RFI Standards) EN61000-4-4 (Burst Standards) EN61000-4-5 (Surge Standards) EN61000-4-6 (Induced RFI Standards) EN61000-4-8 (Magnetic Field Standards) EN61000-4-11 (Voltage Dips Standards)
Environmental Test Compliance	IEC60068-2-6 Fc (Vibration Resistance) IEC60068-2-27 Ea (Shock) IEC60068-2-32 Ed (Free Fall)
NEMA TS1/2 Environmental requirements for traffic control equipment	